

# Deep Underground Science and Engineering Laboratory (DUSEL) Project Overview

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Principal Investigator

BIG  
BANG

$t$	$10^{-44}$	$10^{-37}$ s
$T$	$10^{32}$	$10^{28}$
$E$	$10^{19}$	$10^{15}$

possible dark matter relics

cosmic microwave radiation visible

UCI  
28 January 2011

Figure Courtesy  
PDG and LBNL

# Outline

LONGSECTION OF THE HOMESTAKE MINE

- DUSEL Project Status
- Activities for FY11
- Moving forward

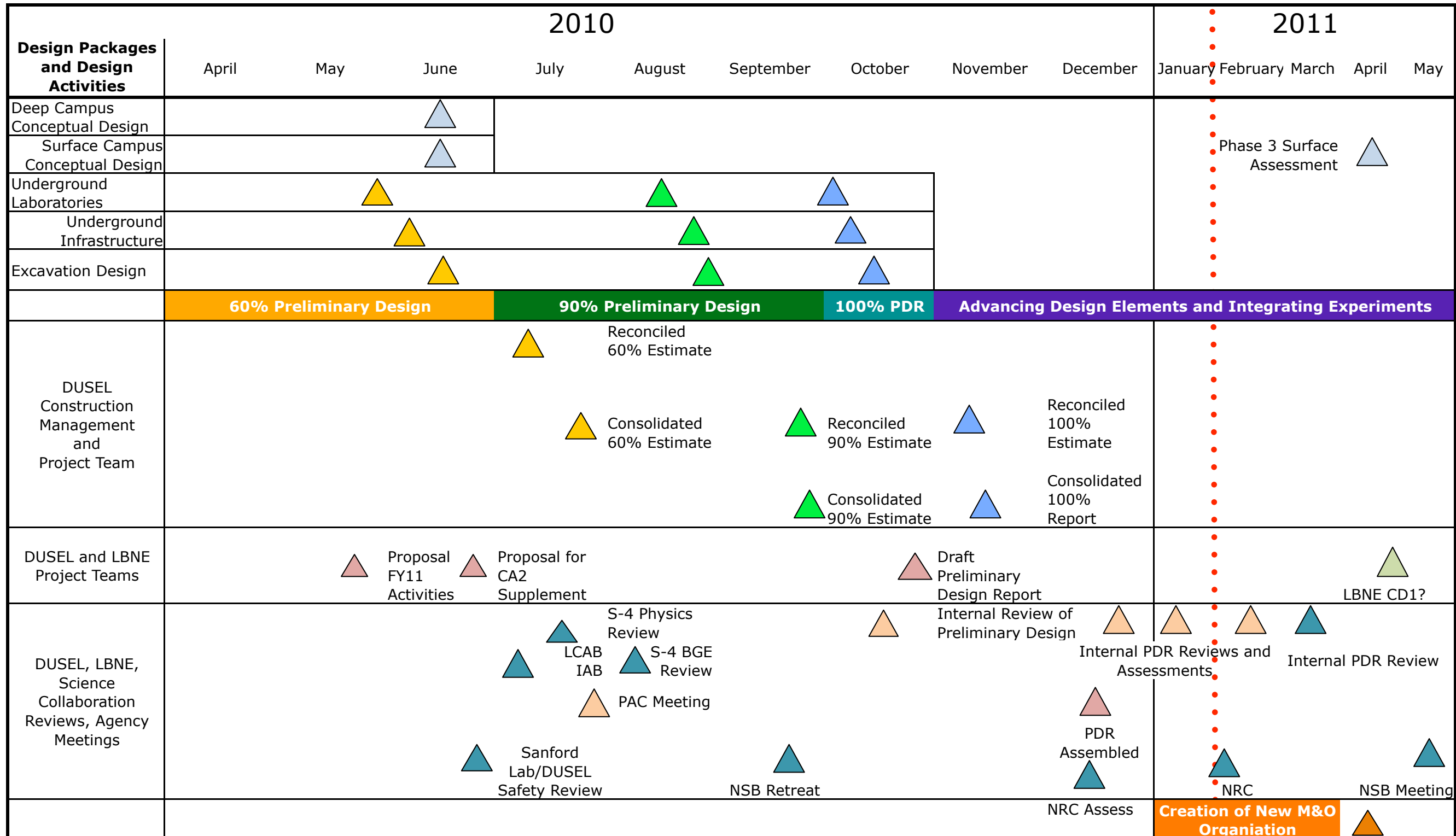


# Preliminary Design

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- UCB has a contract with the NSF to produce a preliminary design of a multidisciplinary, transformational facility and suite of experiments
- Our model developed between 2006 through 2010 was for a comprehensive facility and wide-ranging suite of experiments
  - Physics
  - BGEs
  - E&O
- LBNE maintained a special position in the DUSEL planning
  - two of the four physics pillars
  - CD0 in-place
  - good working relationships between DUSEL and LBNE
    - CD1 design based on DUSEL design work
    - Looking forward to LBNE fulfilling their pledge to hire a Deputy to Mike Headley this month to reside in Lead

# Milestone Schedule to Complete Preliminary Design



# DUSEL Preliminary Design

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- PDR Schedule and Budgets Frozen in December 2010
- Main Report being completed: 10 Volumes
  - V1 Overview
  - V2 Cost and Schedule
  - V3 Science
  - V4 Education & Outreach
  - V5 Facility Design
  - V6 Environment Health & Safety
  - V7 Project Execution Plan
  - V8 Project Control Systems
  - V9 Systems Engineering
  - V10 Operations Plans

# Review Schedule

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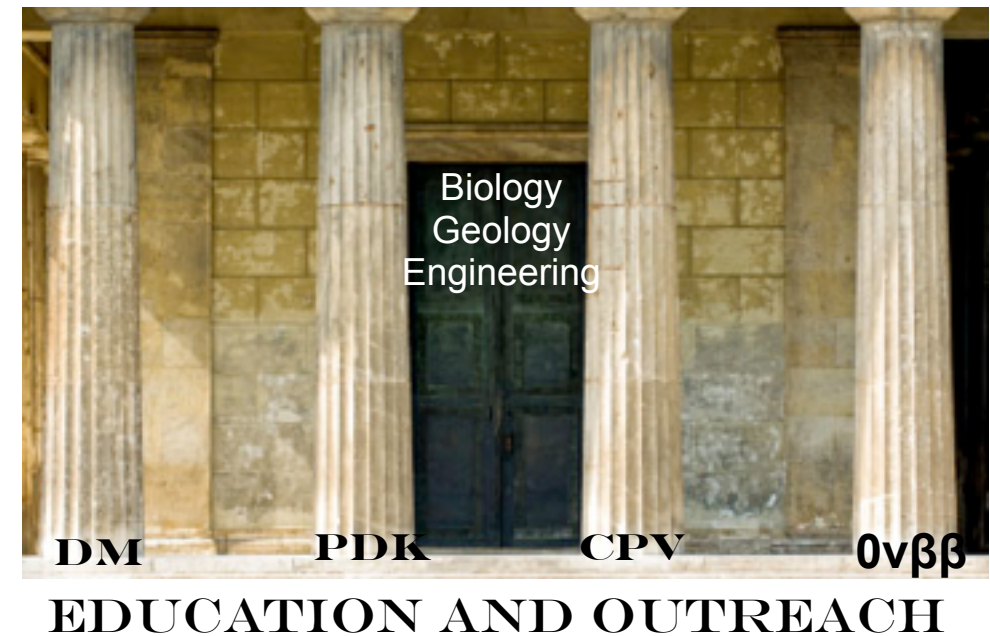
- Initial PDR review (Jay Marx) - October 2010
  - Operations - internal review December 2010
  - C&S - internal vetting January 2011
  - PDR - comprehensive internal review March 2011
  - DOE and NSF review of PDR - TBD
- 
- Review based on \$875M PD developed to date and options

# DUSEL Founded on a Suite of Critical, Multidisciplinary Experiments

Founded on Four Experimental Physics Pillars  
and

Three Research Tenets:

1. Dark Matter Searches
  2. Long Baseline Neutrinos from FNAL
  3. Proton Decay
  4. Neutrinoless Double Beta Decay
- ❖ Diverse multidisciplinary research efforts in Biology, Geology, and Engineering
  - ❖ Additional well-motivated experiments
  - ❖ Integral Education and Outreach



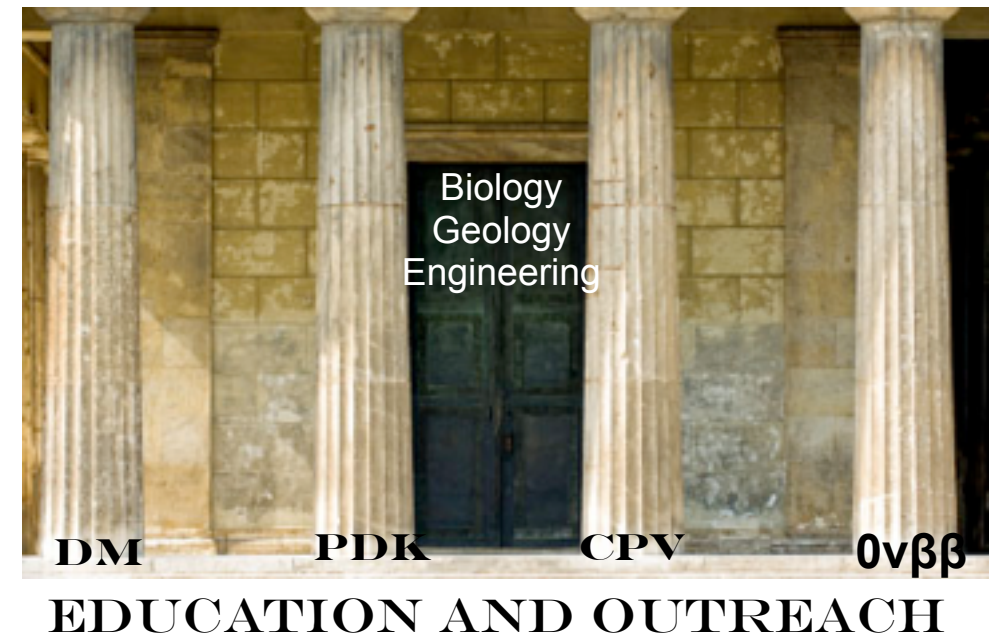


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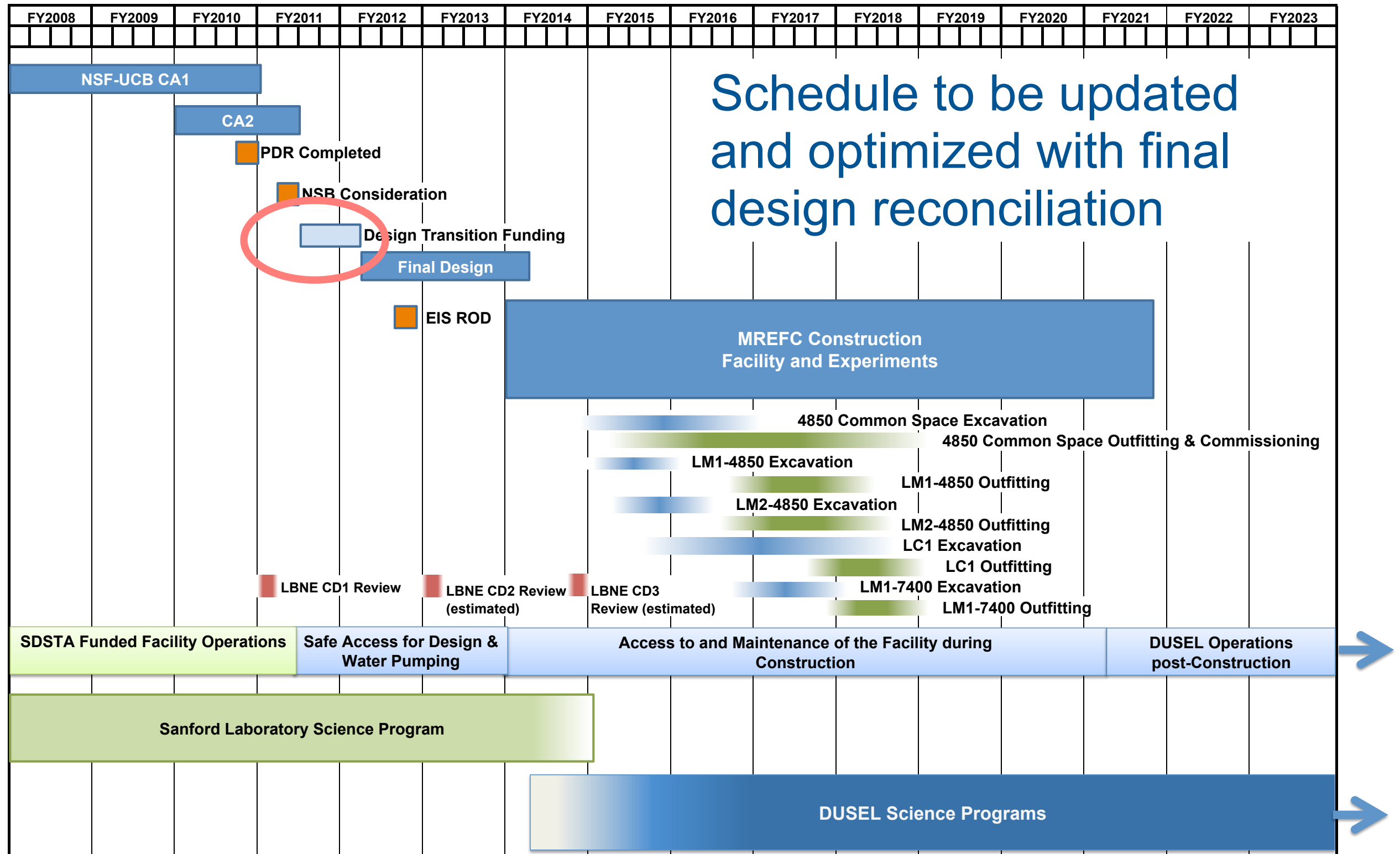


**DUSEL's Suite of Experiments is congruent with all scientific and agency guidance and goals**



# DUSEL's Milestone Schedule through Construction

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# Spanning the Gap from PDR to FDR

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- Transition Proposal by UC Berkeley to NSF
  - maintained DUSEL Team and Project Momentum between PDR consideration by the NSF and anticipated FDR approval/start
  - maintained safe access to the underground to facilitate design and scientific integration activities
  - advanced long-lead items of the facility design such as geotech site investigations to ensure a smooth transition to Final Design
- Proposal addresses issues specifically in the NSF Large Facility Manual to maintain project momentum and continuity of design

# Implications of the NSB's In-actions

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- On 7 January 2011, the NSF indicated by phone that no additional funding would be forth coming
- Communication with the NSF subsequent to this has been *sparse*
- Articles in the popular and scientific press have reported inaccuracies and propagated misconceptions about DUSEL



# NSB statements concerning DUSEL

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- At the NRC meeting in December we heard a variety of opinions from Barry Barish concerning the NRC
- There are a variety of statements in South Dakota newspapers by members of the NSB concerning DUSEL
- Recently (at the URA meeting) the NSF director was also questioned about DUSEL
- **One theme that constantly recurs is that the NSF and the NSB remain highly supportive of DUSEL Science**
- Our task is, now, to translate that theme into an approach enabling joint agency participation in DUSEL science

# Activities to address these issues

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- Engaging the DOE in an active discussion of roles
- Engaging the DOE (and LBNE, in particular) in potential phasing and scaling facility options
- Took actions to preserve the Core DUSEL Design Team
  - Stopped work on a selection of A/E contracts
  - Curtailed project activities deemed to be non-essential for the delivery of PDR or engaging the funding agencies to resolve these concerns
- Undertaking actions to synchronize schedules and activities between SDSTA and the DUSEL Project and coordinate activities with DUSEL stakeholders
- Maintaining integration and engineering activities with LBNE project and collaboration and assuming LBNE will continue to honor its prior pledges and commitments

# Summary

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- DUSEL Project is now heavily engaged with the DOE and NSF regarding models for DUSEL
- The DUSEL project has produced a robust preliminary design of high value in all subsequent agency discussions of roles and facility designs including, importantly, LBNE
- DUSEL Project has embarked on a role of collaborative and open sharing of information with LBNE, we look forward to this continuing in 2011.